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|-----------------|-------------|----------------------|---------------------|------------------|
| 09/254,769      | 03/11/1999  | BRIAN SAMUEL BEAMAN  | YO996-184N          | 7568             |

7590

05/27/2003

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EXAMINER

NGUYEN, VINH P

ART UNIT

PAPER NUMBER

2829

DATE MAILED: 05/27/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/254,769

Applicant(s)

BEAMAN ET AL.

Examiner

VINH P NGUYEN

Art Unit

2829

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE three MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 13 March 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-60 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-11, 13-18, 20-28 and 34-60 is/are rejected.
- 7) ☒ Claim(s) 12, 19, 28-33 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☒ The proposed drawing correction filed on 04/06/03 is: a) ☒ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

1. This application does not contain an abstract of the disclosure as required by 37 CFR 1.72(b). An abstract on a separate sheet is required.

2. Applicant is reminded of the proper content of an abstract of the disclosure.

A patent abstract is a concise statement of the technical disclosure of the patent and should include that which is new in the art to which the invention pertains. If the patent is of a basic nature, the entire technical disclosure may be new in the art, and the abstract should be directed to the entire disclosure. If the patent is in the nature of an improvement in an old apparatus, process, product, or composition, the abstract should include the technical disclosure of the improvement. In certain patents, particularly those for compounds and compositions, wherein the process for making and/or the use thereof are not obvious, the abstract should set forth a process for making and/or use thereof. If the new technical disclosure involves modifications or alternatives, the abstract should mention by way of example the preferred modification or alternative.

The abstract should not refer to purported merits or speculative applications of the invention and should not compare the invention with the prior art.

Where applicable, the abstract should include the following:

- (1) if a machine or apparatus, its organization and operation;
- (2) if an article, its method of making;
- (3) if a chemical compound, its identity and use;

(4) if a mixture, its ingredients;

(5) if a process, the steps.

Extensive mechanical and design details of apparatus should not be given.

3. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 250 words. It is important that the abstract not exceed 250 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

4. Claims 4-9, 26, 36-49, 52-58, are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claims 4-9 "said perforation" has no antecedent basis.

In claim 26, it is unclear what "means for holding said substrate", "means for retractable moving said structure of claim 1 toward and away from said electronic device" and "means for applying electrical signal..." represent. Are they shown in any of drawings?

In claim 36, "said probes" has no antecedent basis. Furthermore, it is unclear what "a preformed frame of foamed elastomer material surrounding clusters, groupings, or arrays of said probes" represents. Is it shown in any of drawings?

In claim 37, it is unclear what "a layer of elastomer material" represents. Is it shown in any drawings?

In claims 38-39 and 45, it is unclear what "a sheet of invar material" represents. Is it shown in any of drawings?

In claims 40-41, it is unclear what "a sheet of polymer material" represents. Is it shown in any of drawings? It appears that this sheet is different from "a layer of elastomer material" in claim 37.

In claims 42-43, it is unclear what "frame of invar material" represents. Is it shown in any of drawings?

In claim 44, it is unclear what "a plurality of probes arrays" represent. Are they shown in any of drawings?

In claim 46, it is unclear what "a means for permitting each of said plurality of said second ends to move about reference positions" represents. Is it shown in any drawings?

In claims 47-48, "said sheet" has no antecedent basis.

In claim 49, "said dielectric" has no antecedent basis.

In claim 52, it is unclear what "a layer of elastomer material" represents. Is it shown in any of drawings? Furthermore, "said probes" has no antecedent basis.

In claim 53, it is unclear what "a sheet of polymer material" represents. Is it shown in any drawings? It appears that this sheet is different from "permitting means" in claim 1.

In claim 54, it is unclear "an epoxy material" represents. Is it shown in any drawings? Furthermore, "said cantilever flaps" has no antecedent basis.

In claim 55, it is unclear what "the plurality of probes" represent. Are they shown in any of drawings?

In claim 56, it is unclear what "the plurality of collar" and "the plurality of probe wires" represent. Are they shown in any of drawings?

In claim 57, it is unclear what "a sheet of polymer material" and "said plurality of collars" represent. Are they shown in any of drawings? Furthermore, "said plurality of collars" has no antecedent basis.

In claim 58, it is unclear what "a plurality of probes arrays" represents. Are they shown in any of drawings?

The dependent claims not specifically address share the same indefiniteness as they depend from rejected base claims.

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1-3,10,11,13-18,20-25,27,34,35,46,51,59-60 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bross et al (Pat # 5,225,777) in view of Beaman et al (Pat # 5,371,654)

As to claims 1-3,10,34,46,59-60, Bross et al disclose a high density probe for making contact with an integrated circuit having a substrate (23), a plurality of elongated electrical conductors (36) extending away from the surface of the substrate (23), means for permitting (32) for second ends to move about reference positions. It appears that the permitting means is a sheet of material with a plurality of through holes therein through which the second ends project. It is noted that the wire elongated electrical connector of Bross et al does not have a ball shaped protuberance. However, Beaman et al teach that the elongated electrical conductor (84) with a ball shaped protuberance (90,92) is well known in the art. Therefore, it would have been obvious for one of ordinary skill in the art to make the elongated connector of Bross et al with ball shaped protuberance at first and second ends so that these end would not severely damage the pads during the making contact.

As to claim 11, it appears that the sheet (32) is selected from the group consisting of a rigid material and a compliant material in order to support part of the elongated conductors. Furthermore, the material for the substrate such as silicon or ceramic with thin film wiring would have been well-known in the art.

As to claim 13, it appears that the sheet (32) is spaced apart from the surface of the substrate (23) by a flexible support (30,26).

As to claim 14, Bross et al do not disclose an insulating material is an elastomeric material. However, Beaman et al teach that it is well known to use elastomeric material as an insulating material. It would have been obvious for one of ordinary skill in the art to have the insulating material of Bross et al made of elastomeric material so that it helps to bias the conductors to the pads gently, therefore less force is applied to these pads and the damage of these pads could be avoided.

As to claim 15, it appears that the conductor have a linear shape.

As to claim 16, it appears that both the sheet and the support containing a plurality of electrical conductors (36).

As to claim 17, it appears that the space is filled with insulating materials (26,30) and these materials are flexible. It is noted that everything is flexible.



As to claim 18, Bross et al do not disclose an insulating material is an elastomeric material. However, Beaman et al teach that it is well known to use elastomeric material as an insulating material. It would have been obvious for one of ordinary skill in the art to have the insulating material of Bross et al made of elastomeric material so that it helps to bias the conductors to the pads gently, therefore less force is applied to these pads and the damage of these pads could be avoided.

As to claims 20-21, it appears that the conductors (36) are distributed into a plurality of groups and these groups are in an array.

As to claim 22, it appears that the device of Bross et al is a probe for an electronic device.

As to claim 23, it appears that the electronic device (12) is selected from the group consisting of an integrated circuit chip and a packaging substrate (VLSI).

As to claim 24, it is well known that the VLSI integrated circuit chip containing a plurality of integrated circuit chips.

As to claim 25, it is well known that the substrate containing the integrated circuit chips is a wafer.

As to claim 27, it appears that the ball shaped protuberance of Beaman et al is a spherelike..

As to claims 34 and 51, Bross et al do not mention about the material for the substrate such as "epoxy glass laminate substrate with copper wiring" or "silicon substrate with thin film wiring. However, the material for such substrate would have been well known in the art.

As to claim 35, it appears that the apparatus is a probe for simultaneously contacting a plurality of integrated circuits.

As to claims 47-49, Bross et al do not disclose the material for the sheet. However, it appears that the selection of the material for the sheet would have been dependent on their cost and their availability since the selection of these material does not effect on the test performance and the criticality of these material has not been established by Applicants.

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claim 50 is rejected under 35 U.S.C. 102(b) as being anticipated by Beaman et al (Pat # 5,371,654).

As to claim 50, Beaman et al disclose in figure # 6 an apparatus having a first fan out substrate (94) with a plurality of contact locations (104), a plurality of ball bonds (90) attached to the contact locations (104), a plurality of wires (84) extending outward from the ball bonds (104)

and a plurality of ball bond shaped contacts (92) on the end of the wires (84).

9. Claim 50 is rejected under 35 U.S.C. 102(b) as being anticipated by Luttmer (Pat # 3,795,037).

As to claim 50, Luttmer discloses in figure # 9 an apparatus having a first fan out substrate (74) with a plurality of contact locations (76), a plurality of ball bonds (70) attached to the contact locations (76), a plurality of wires (72) extending outward from the ball bonds (70) and a plurality of ball bond shaped contacts (70) on the end of the wires (72).

10. Claims 12,19,29-33 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The prior art does not disclose a sheet of electrically conductive material having a plurality of through holes and a sheet of dielectric material for preventing the elongated electrical conductors from electrically contacting the sheet of electrically conductive material

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to VINH P. NGUYEN whose telephone number is (703) 305-4914.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 305-4900



VINH P. NGUYEN  
PRIMARY EXAMINER  
ART UNIT 2829

05/19/03